

PATENT
Attorney Docket No. 372155

REMARKS

Claims 1-83 are pending in the application. Claims 1, 39 and 51 have been amended. Claims 84-92 are withdrawn without prejudice.

Claim 1 has been amended to restate the cured resin content in terms of aggregate composition, i.e., that the composition is 70% to 90% by weight aggregate as is also stated in claim 52. This finds support, for example, on page 17 at lines 3-8 of the specification. The remaining independent claims 39 and 51 identify the aggregate content as being from 80% to 90%. Claim 31 has been amended to correct the spelling of "polyurethane." Claim 51 has been amended to resolve ambiguity arising from redundant use of (a) and (b) by deleting unnecessary uses of these terms.

Claims 1-83 stand rejected for obviousness-type double patenting over claims 1-5 of United States Patent 6,686,435. Applicant respectfully traverses this rejection for the reasons explained below.

These are claims 1-5 of the '435 patent:

1. A polyurethane containing silica filler, comprising:
the reaction product of a natural oil-based polyol component and an isocyanate, wherein said polyol is made by hydroxylating epoxidized natural oil with a catalytic amount of fluoroboric acid, an alcohol, and water with the amount of water being about 10% to 30% by weight of all the components and wherein said natural oil-based polyol component is comprised of silica and a natural oil-based polyol in at least about a 2:1 weight ratio.
2. The polyurethane of claim 1, further comprising the mixture of:
a drying agent; and

PATENT
Attorney Docket No. 372155

an antifoaming agent.

3. A method for making a filled polyurethane, comprising:

hydroxylating epoxidized natural oil with a catalytic amount of fluoboric acid, an alcohol, and water to form a natural oil-based polyol, wherein said water is about 10% to 30% by weight of all the components;

mixing said natural oil-based polyol, a drying agent, and an antifoaming agent together to form a polyol component;

drying said polyol component;

mixing dried filler with said polyol component to form a mixture; and
adding an isocyanate to said mixture wherein said natural oil-based polyol and said isocyanate react to form a filled polyurethane.

4. The method claim 3, wherein said filler is silica.

5. The method of claim 3, wherein said isocyanate component is added to said mixture by stirring said isocyanate component with said mixture in the presence of nitrogen.

Obviousness-type double patenting "is a judge-made criterion adopted out of necessity where the courts were faced with a situation in which claims in two applications or patents were not drawn precisely to the same invention, but were drawn to inventions so very much alike as to render one obvious in view of the other and to effectively extend the life of the patent that would have the earlier of the two issue dates." *Gerber Garment Technology Inc. v. Lectra Systems Inc.*, 16 USPQ2d 1436, 1439, 916 F2d 683, ____ (Fed. Cir. 1990). Thus, the basic inquiry in context of the present rejection is whether the present claims are an obvious variation of claims 1-5 of the '435 patent.

PATENT
Attorney Docket No. 372155

Claims 1-5 of the '435 patent recite product and process for making a polyurethane product with a silica filler. The claimed product and process make use of fluoroboric acid to catalyze hydroxylation of an epoxidized natural oil to form a polyol for reaction with an isocyanate to form a polyurethane. Although the amount of filler is not specifically claimed, the '435 patent specification recites:

Examples of fillers that may be added include, but are not limited to, silica, alumina, calcium carbonate, dolomite, silicates, glass, ceramic, sand, clay, and talc. The filler may be combined with the natural oil-based polyol in about 1 to 200% by weight of the natural oil-based polyol. High modulus fillers such as silica and alumina may be abrasive if applied with machines requiring pumping, but they impart high electrical properties and excellent mechanical properties. Soft fillers like calcium carbonate give excellent flow properties and are more suitable for machine application. Using large quantities of fillers improves the thermal conductivity of the products created so that excellent dielectric strength may be provided.

It will be appreciated from the foregoing passage that the filler is suitably limited to 1% to 200% by weight of the natural oil-based polyol. Furthermore, the word "concrete" is nowhere present in the '435 patent, which also commences the Background of the Invention section by stating, "[t]he present invention relates to a method for making natural oil-based polyols. Still further, the present invention includes using natural oil-based polyols to produce polyurethane resins for use as casting compounds for electrical applications." The specification is replete with use of these materials in casting electrical compounds. In particular, the '435 patent does not claim "concrete" or a method of making concrete, and this contrasts with the present claims.

The present claims recite that the polymer concrete composition is, alternatively, from 80% to 90% by weight aggregate or from 70% to 90% by weight aggregate. In polyurethane concretes, the relative cost of aggregate is generally much cheaper than the resin, so the challenge is to find materials with suitable strength that have relatively high

PATENT
Attorney Docket No. 372155

aggregate content, as is presently claimed. In context of the '435 patent disclosure, the filler content is at most 200% by weight of the polyol, and the polyol is roughly half of the resin content. In context of the present claims where the aggregate is deemed to be the filler of the '435 patent, even if the resin content were 100% polyol to achieve a maximum polyol content, these limits mathematically require the aggregate/filler content to exceed the 200% upper limit that is imposed by the '435 patent. By way of example, if the aggregate content is 70% this leaves 30% for the resin where the upper limit for the filler taught by the '435 patent as being 200% of the resin would find an upper limit at 60%. This is even assuming that the resin can be entirely the polyol which it cannot be because an isocyanate moiety is also required.

In terms of the obviousness analysis, the '435 patent claims do not particularly claim a concrete with the aggregate limitation that is now particularly claimed. It would have been impossible to claim this limit in the '435 patent where the specification teaches away from having the filler exceed 200% by weight of the polyol. This distinction is material, nonobvious, and patentable where the art of record does not teach or suggest that a polyurethane concrete may have an aggregate composition this high and still perform with the surprisingly good mechanical advantages that are clearly documented in the respective Figures of the present application. Furthermore, the applied claims of the '435 patent addressed only the formation of polyurethane by this particular fluoroboric catalysis reaction and the formation of electroinsulators from filled urethane compositions. The manufacture of polymer concrete by use of these instrumentalities was not contemplated nor specifically disclosed or claimed in the '435 patent. In


PATENT
Attorney Docket No. 372155

summary, the foregoing distinctions hold true under either a one-way or two way analysis and mandate allowance of the present claims.

The foregoing response meets all of the requirements set forth in the Office Action dated November 4, 2004. A three month extension of time is requested. The Commissioner is authorized to charge any additionally required fees to deposit account 12-0600. Applicants' attorney urges Examiner Niland to telephone if a conversation could expedite prosecution.

Respectfully submitted,

LATHROP & GAGE L.C.

By: 
Dan Cleveland, Jr. Reg. No. 36,106
Lathrop & Gage L.C.
4845 Pearl East Circle, Suite 300
Boulder, CO 80301
(720) 931-3012